CENTER FOR DRUG EVALUATION AND RESEARCH APPROVAL PACKAGE FOR: APPLICATION NUMBER

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Final Printed Labeling

(Nos. 4341, 4552, 5182, 6594, 6624, 9296, 7068, 3727, 7069, 7070, 7148, 7149) NEW

SYNTHROID®

(levothyroxine sodium tablets, USP)

Rx only

DESCRIPTION

SYNTHROID[®] (levothyroxine sodium tablets, USP) contain synthetic crystalline L-3,3',5,5'-tetraiodothyronine sodium salt [levothyroxine (T_4) sodium]. Synthetic T_4 is identical to that produced in the human thyroid gland. Levothyroxine (T_4) sodium has an empirical formula of $C_{15}H_{10}I_4N$ NaO₄ • H_2O , molecular weight of 798.86 g/mol (anhydrous), and structural formula as shown:

HO
$$\sim$$
 CH₂ \sim CCOONa * xH₂C

Inactive Ingredients: acacia, confectioner's sugar (contains corn starch), lactose monohydrate, magnesium stearate, povidone, and talc. The following are the color additives by tablet strength:

Strength (mcg)	Color additive(s)
25	FD&C Yellow No. 6 Aluminum Lake
50	None
75	FD&C Red No. 40 Aluminum Lake, FD&C Blue No. 2 Aluminum Lake
88	FD&C Blue No. 1 Aluminum Lake, FD&C Yellow No. 6 Aluminum Lake, D&C
	Yellow No. 10 Aluminum Lake
100	D&C Yellow No. 10 Aluminum Lake, FD&C Yellow No. 6 Aluminum Lake
112	D&C Red No. 27 & 30 Aluminum Lake
125	FD&C Yellow No. 6 Aluminum Lake, FD&C Red No. 40 Aluminum Lake, FD&C
	Blue No. 1 Aluminum Lake
137	FD&C Blue No. 1 Aluminum Lake
150	FD&C Blue No. 2 Aluminum Lake
175	FD&C Blue No. 1 Aluminum Lake, D&C Red No. 27 & 30 Aluminum Lake
200	FD&C Red No. 40 Aluminum Lake
300	D&C Yellow No. 10 Aluminum Lake, FD&C Yellow No. 6 Aluminum Lake,
	FD&C Blue No. 1 Aluminum Lake

CLINICAL PHARMACOLOGY

Thyroid hormone synthesis and secretion is regulated by the hypothalamic-pituitary-thyroid axis. Thyrotropin-releasing hormone (TRH) released from the hypothalamus stimulates secretion of thyrotropin-stimulating hormone, TSH, from the anterior pituitary. TSH, in turn, is the physiologic stimulus for the synthesis and secretion of thyroid hormones, L-thyroxine (T₄) and L-triiodothyronine (T₃), by the thyroid gland. Circulating serum T₃ and T₄ levels exert a feedback effect on both TRH and TSH secretion. When serum T₃ and T₄ levels increase, TRH and TSH secretion decrease. When thyroid hormone levels decrease, TRH and TSH secretion increase.

The mechanisms by which thyroid hormones exert their physiologic actions are not completely understood, but it is thought that their principal effects are exerted through control of DNA transcription and protein synthesis. T₃ and T₄ diffuse into the cell nucleus and bind to thyroid receptor proteins attached to DNA. This hormone nuclear receptor complex activates gene transcription and synthesis of messenger RNA and cytoplasmic proteins.

Thyroid hormones regulate multiple metabolic processes and play an essential role in normal growth and development, and normal maturation of the central nervous system and bone. The metabolic actions of thyroid hormones include augmentation of cellular respiration and thermogenesis, as well as metabolism of proteins, carbohydrates and lipids. The protein anabolic effects of thyroid hormones are essential to normal growth and development.

The physiological actions of thyroid hormones are produced predominantly by T_3 , the majority of which (approximately 80%) is derived from T_4 by deiodination in peripheral tissues.

Levothyroxine, at doses individualized according to patient response, is effective as replacement or supplemental therapy in hypothyroidism of any etiology, except transient hypothyroidism during the recovery phase of subacute thyroiditis.

Levothyroxine is also effective in the suppression of pituitary TSH secretion in the treatment or prevention of various types of euthyroid goiters, including thyroid nodules, Hashimoto's thyroiditis, multinodular goiter and, as adjunctive therapy in the management of thyrotropin-dependent well-differentiated thyroid cancer (see INDICATIONS AND USAGE, PRECAUTIONS, and DOSAGE AND ADMINISTRATION).

Pharmacokinetics

Absorption – Absorption of orally administered T₄ from the gastrointestinal (GI) tract ranges from 40% to 80%. The majority of the levothyroxine dose is absorbed from the jejunum and upper ileum. The relative bioavailability of SYNTHROID tablets, compared to an equal nominal dose of oral levothyroxine sodium solution, is approximately 93%. T₄ absorption is increased by fasting, and decreased in malabsorption syndromes and by certain foods such as soybean infant formula. Dietary fiber decreases bioavailability of T₄. Absorption may also decrease with age. In addition, many drugs and foods affect T₄ absorption (see **PRECAUTIONS**, **Drug Interactions** and **Drug-Food Interactions**).

Distribution – Circulating thyroid hormones are greater than 99% bound to plasma proteins, including thyroxine-binding globulin (TBG), thyroxine-binding prealbumin

(TBPA), and albumin (TBA), whose capacities and affinities vary for each hormone. The higher affinity of both TBG and TBPA for T₄ partially explains the higher serum levels, slower metabolic clearance, and longer half-life of T₄ compared to T₃. Protein-bound thyroid hormones exist in reverse equilibrium with small amounts of free hormone. Only unbound hormone is metabolically active. Many drugs and physiologic conditions affect the binding of thyroid hormones to serum proteins (see PRECAUTIONS, Drug Interactions and Drug-Laboratory Test Interactions). Thyroid hormones do not readily cross the placental barrier (see PRECAUTIONS, Pregnancy).

 $Metabolism - T_4$ is slowly eliminated (see **Table 1**). The major pathway of thyroid hormone metabolism is through sequential deiodination. Approximately eighty-percent of circulating T_3 is derived from peripheral T_4 by monodeiodination. The liver is the major site of degradation for both T_4 and T_3 , with T_4 deiodination also occurring at a number of additional sites, including the kidney and other tissues. Approximately 80% of the daily dose of T_4 is deiodinated to yield equal amounts of T_3 and reverse T_3 (r T_3). T_3 and r T_3 are further deiodinated to diiodothyronine. Thyroid hormones are also metabolized via conjugation with glucuronides and sulfates and excreted directly into the bile and gut where they undergo enterohepatic recirculation.

Elimination – Thyroid hormones are primarily eliminated by the kidneys. A portion of the conjugated hormone reaches the colon unchanged and is eliminated in the feces. Approximately 20% of T_4 is eliminated in the stool. Urinary excretion of T_4 decreases with age.

Table 1: Pharmacokinetic Parameters of Thyroid Hormones in Euthyroid Patients						
Hormone	Ratio in Thyroglobulin	Biologic Potency	t _{1/2} (days)	Protein Binding (%) ²		
Levothyroxine (T ₄)	10 - 20	1	6-71	99.96		
Liothyronine (T_3)	1	4	≤ 2	99.5		
^T 3 to 4 days in hyperthyroidism, 9 to 10 days in hypothyroidism						
² Includes TBG, TBPA, and TBA						

INDICATIONS AND USAGE

Levothyroxine sodium is used for the following indications:

Hypothyroidism – As replacement or supplemental therapy in congenital or acquired hypothyroidism of any etiology, except transient hypothyroidism during the recovery phase of subacute thyroiditis. Specific indications include: primary (thyroidal), secondary (pituitary), and tertiary (hypothalamic) hypothyroidism and subclinical hypothyroidism. Primary hypothyroidism may result from functional deficiency, primary atrophy, partial or total congenital absence of the thyroid gland, or from the effects of surgery, radiation, or drugs, with or without the presence of goiter.

Pituitary TSH Suppression – In the treatment or prevention of various types of euthyroid goiters (see WARNINGS and PRECAUTIONS), including thyroid nodules (see WARNINGS and PRECAUTIONS), subacute or chronic lymphocytic thyroiditis (Hashimoto's thyroiditis), multinodular goiter (see WARNINGS and PRECAUTIONS)

and, as an adjunct to surgery and radioiodine therapy in the management of thyrotropindependent well-differentiated thyroid cancer.

CONTRAINDICATIONS

Levothyroxine is contraindicated in patients with untreated subclinical (suppressed serum TSH level with normal T₃ and T₄ levels) or overt thyrotoxicosis of any etiology and in patients with acute myocardial infarction. Levothyroxine is contraindicated in patients with uncorrected adrenal insufficiency since thyroid hormones may precipitate an acute adrenal crisis by increasing the metabolic clearance of glucocorticoids (see **PRECAUTIONS**). SYNTHROID is contraindicated in patients with hypersensitivity to any of the inactive ingredients in SYNTHROID tablets (See **DESCRIPTION**, **Inactive Ingredients**).

WARNINGS

WARNING: Thyroid hormones, including SYNTHROID, either alone or with other therapeutic agents, should not be used for the treatment of obesity or for weight loss. In euthyroid patients, doses within the range of daily hormonal requirements are ineffective for weight reduction. Larger doses may produce serious or even life threatening manifestations of toxicity, particularly when given in association with sympathomimetic amines such as those used for their anorectic effects.

Levothyroxine sodium should not be used in the treatment of male or female infertility unless this condition is associated with hypothyroidism.

In patients with nontoxic diffuse goiter or nodular thyroid disease, particularly the elderly or those with underlying cardiovascular disease, levothyroxine sodium therapy is contraindicated if the serum TSH level is already suppressed due to the risk of precipitating overt thyrotoxicosis (see **CONTRAINDICATIONS**). If the serum TSH level is not suppressed, SYNTHROID should be used with caution in conjunction with careful monitoring of thyroid function for evidence of hyperthyroidism and clinical monitoring for potential associated adverse cardiovascular signs and symptoms of hyperthyroidism.

PRECAUTIONS

General

Levothyroxine has a narrow therapeutic index. Regardless of the indication for use, careful dosage titration is necessary to avoid the consequences of over- or undertreatment. These consequences include, among others, effects on growth and development, cardiovascular function, bone metabolism, reproductive function, cognitive function, emotional state, gastrointestinal function, and on glucose and lipid metabolism. Many drugs interact with levothyroxine sodium necessitating adjustments in dosing to maintain therapeutic response (see **Drug Interactions**).

Effects on bone mineral density- In women, long-term levothyroxine sodium therapy has been associated with increased bone resorption, thereby decreasing bone mineral

density, especially in post-menopausal women on greater than replacement doses or in women who are receiving suppressive doses of levothyroxine sodium. The increased bone resorption may be associated with increased serum levels and urinary excretion of calcium and phosphorous, elevations in bone alkaline phosphatase and suppressed serum parathyroid hormone levels. Therefore, it is recommended that patients receiving levothyroxine sodium be given the minimum dose necessary to achieve the desired clinical and biochemical response.

Patients with underlying cardiovascular disease- Exercise caution when administering levothyroxine to patients with cardiovascular disorders and to the elderly in whom there is an increased risk of occult cardiac disease. In these patients, levothyroxine therapy should be initiated at lower doses than those recommended in younger individuals or in patients without cardiac disease (see WARNINGS; PRECAUTIONS, Geriatric Use; and DOSAGE AND ADMINISTRATION). If cardiac symptoms develop or worsen, the levothyroxine dose should be reduced or withheld for one week and then cautiously restarted at a lower dose. Overtreatment with levothyroxine sodium may have adverse cardiovascular effects such as an increase in heart rate, cardiac wall thickness, and cardiac contractility and may precipitate angina or arrhythmias. Patients with coronary artery disease who are receiving levothyroxine therapy should be monitored closely during surgical procedures, since the possibility of precipitating cardiac arrhythmias may be greater in those treated with levothyroxine. Concomitant administration of levothyroxine and sympathomimetic agents to patients with coronary artery disease may precipitate coronary insufficiency.

Patients with nontoxic diffuse goiter or nodular thyroid disease- Exercise caution when administering levothyroxine to patients with nontoxic diffuse goiter or nodular thyroid disease in order to prevent precipitation of thyrotoxicosis (see WARNINGS). If the serum TSH is already suppressed, levothyroxine sodium should not be administered (see CONTRAINDICATIONS).

Associated endocrine disorders

Hypothalamic/pituitary hormone deficiencies- In patients with secondary or tertiary hypothyroidism, additional hypothalamic/pituitary hormone deficiencies should be considered, and, if diagnosed, treated (see PRECAUTIONS, Autoimmune polyglandular syndrome for adrenal insufficiency).

Autoimmune polyglandular syndrome- Occasionally, chronic autoimmune thyroiditis may occur in association with other autoimmune disorders such as adrenal insufficiency, pernicious anemia, and insulin-dependent diabetes mellitus. Patients with concomitant adrenal insufficiency should be treated with replacement glucocorticoids prior to initiation of treatment with levothyroxine sodium. Failure to do so may precipitate an acute adrenal crisis when thyroid hormone therapy is initiated, due to increased metabolic clearance of glucocorticoids by thyroid hormone. Patients with diabetes mellitus may require upward adjustments of their antidiabetic therapeutic regimens when treated with levothyroxine (see PRECAUTIONS, Drug Interactions).

Other associated medical conditions

Infants with congenital hypothyroidism appear to be at increased risk for other congenital anomalies, with cardiovascular anomalies (pulmonary stenosis, atrial septal defect, and ventricular septal defect) being the most common association.

Information for Patients

Patients should be informed of the following information to aid in the safe and effective use of SYNTHROID:

- 1. Notify your physician if you are allergic to any foods or medicines, are pregnant or intend to become pregnant, are breast-feeding or are taking any other medications, including prescription and over-the-counter preparations.
- 2. Notify your physician of any other medical conditions you may have, particularly heart disease, diabetes, clotting disorders, and adrenal or pituitary gland problems. Your dose of medications used to control these other conditions may need to be adjusted while you are taking SYNTHROID. If you have diabetes, monitor your blood and/or urinary glucose levels as directed by your physician and immediately report any changes to your physician. If you are taking anticoagulants (blood thinners), your clotting status should be checked frequently.
- Use SYNTHROID only as prescribed by your physician. Do not discontinue or change the amount you take or how often you take it, unless directed to do so by your physician.
- 4. The levothyroxine in SYNTHROID is intended to replace a hormone that is normally produced by your thyroid gland. Generally, replacement therapy is to be taken for life, except in cases of transient hypothyroidism, which is usually associated with an inflammation of the thyroid gland (thyroiditis).
- 5. Take SYNTHROID as a single dose, preferably on an empty stomach, one-half to one hour before breakfast. Levothyroxine absorption is increased on an empty stomach.
- 6. It may take several weeks before you notice an improvement in your symptoms.
- 7. Notify your physician if you experience any of the following symptoms: rapid or irregular heartbeat, chest pain, shortness of breath, leg cramps, headache, nervousness, irritability, sleeplessness, tremors, change in appetite, weight gain or loss, vomiting, diarrhea, excessive sweating, heat intolerance, fever, changes in menstrual periods, hives or skin rash, or any other unusual medical event.
- 8. Notify your physician if you become pregnant while taking SYNTHROID. It is likely that your dose of SYNTHROID will need to be increased while you are pregnant.
- Notify your physician or dentist that you are taking SYNTHROID prior to any surgery.
- 10. Partial hair loss may occur rarely during the first few months of SYNTHROID therapy, but this is usually temporary.
- 11. SYNTHROID should not be used as a primary or adjunctive therapy in a weight control program.
- 12. Keep SYNTHROID out of the reach of children. Store SYNTHROID away from heat, moisture, and light.

Laboratory Tests

General

The diagnosis of hypothyroidism is confirmed by measuring TSH levels using a sensitive assay (second generation assay sensitivity ≤ 0.1 mIU/L or third generation assay sensitivity < 0.01 mIU/L) and measurement of free-T₄.

The adequacy of therapy is determined by periodic assessment of appropriate laboratory tests and clinical evaluation. The choice of laboratory tests depends on various factors including the etiology of the underlying thyroid disease, the presence of concomitant medical conditions, including pregnancy, and the use of concomitant medications (see **PRECAUTIONS**, **Drug Interactions and Drug-Laboratory Test Interactions**). Persistent clinical and laboratory evidence of hypothyroidism despite an apparent adequate replacement dose of SYNTHROID may be evidence of inadequate absorption, poor compliance, drug interactions, or decreased T₄ potency of the drug product.

Adults

In adult patients with primary (thyroidal) hypothyroidism, serum TSH levels (using a sensitive assay) alone may be used to monitor therapy. The frequency of TSH monitoring during levothyroxine dose titration depends on the clinical situation but it is generally recommended at 6-8 week intervals until normalization. For patients who have recently initiated levothyroxine therapy and whose serum TSH has normalized or in patients who have had their dosage or brand of levothyroxine changed, the serum TSH concentration should be measured after 8-12 weeks. When the optimum replacement dose has been attained, clinical (physical examination) and biochemical monitoring may be performed every 6-12 months, depending on the clinical situation, and whenever there is a change in the patient's status. It is recommended that a physical examination and a serum TSH measurement be performed at least annually in patients receiving SYNTHROID (see WARNINGS, PRECAUTIONS, and DOSAGE AND ADMINISTRATION).

Pediatrics

In patients with congenital hypothyroidism, the adequacy of replacement therapy should be assessed by measuring both serum TSH (using a sensitive assay) and total- or free- T₄. During the first three years of life, the serum total- or free- T₄ should be maintained at all times in the upper half of the normal range. While the aim of therapy is to also normalize the serum TSH level, this is not always possible in a small percentage of patients, particularly in the first few months of therapy. TSH may not normalize due to a resetting of the pituitary-thyroid feedback threshold as a result of *in utero* hypothyroidism. Failure of the serum T₄ to increase into the upper half of the normal range within 2 weeks of initiation of SYNTHROID therapy and/or of the serum TSH to decrease below 20 mU/L within 4 weeks should alert the physician to the possibility that the child is not receiving adequate therapy. Careful inquiry should then be made regarding compliance, dose of medication administered, and method of administration prior to raising the dose of SYNTHROID.

The recommended frequency of monitoring of TSH and total or free T_4 in children is as follows: at 2 and 4 weeks after the initiation of treatment; every 1-2 months during the first year of life; every 2-3 months between 1 and 3 years of age; and every 3 to 12 months thereafter until growth is completed. More frequent intervals of monitoring may be necessary if poor compliance is suspected or abnormal values are obtained. It is

recommended that TSH and T₄ levels, and a physical examination, if indicated, be performed 2 weeks after any change in SYNTHROID dosage. Routine clinical examination, including assessment of mental and physical growth and development, and bone maturation, should be performed at regular intervals (see PRECAUTIONS, Pediatric Use and DOSAGE AND ADMINISTRATION).

Secondary (pituitary) and tertiary (hypothalamic) hypothyroidism

Adequacy of therapy should be assessed by measuring serum free- T₄ levels, which should be maintained in the upper half of the normal range in these patients.

Drug Interactions

Many drugs affect thyroid hormone pharmacokinetics and metabolism (e.g., absorption, synthesis, secretion, catabolism, protein binding, and target tissue response) and may alter the therapeutic response to SYNTHROID. In addition, thyroid hormones and thyroid status have varied effects on the pharmacokinetics and actions of other drugs. A listing of drug-thyroidal axis interactions is contained in Table 2.

The list of drug-thyroidal axis interactions in Table 2 may not be comprehensive due to the introduction of new drugs that interact with the thyroidal axis or the discovery of previously unknown interactions. The prescriber should be aware of this fact and should consult appropriate reference sources (e.g., package inserts of newly approved drugs, medical literature) for additional information if a drug-drug interaction with levothyroxine is suspected.

Table 2: Drug-Thyroidal Axis Interactions				
Drug or Drug Class	Effect			
Drugs that may reduce TSH secret	tion -the reduction is not sustained; therefore, hypothyroidism does not occur			
Dopamine/Dopamine Agonists	Use of these agents may result in a transient reduction in TSH secretion when			
Glucocorticoids	administered at the following doses: Dopamine (≥ 1 mcg/kg/min);			
Octreotide	Glucocorticoids (hydrocortisone ≥ 100 mg/day or equivalent); Octreotide (> 100			
	mcg/day).			
	Drugs that alter thyroid hormone secretion			
Drugs that may decrease thyroid h	ormone secretion, which may result in hypothyroidism			
Aminoglutethimide	Long-term lithium therapy can result in goiter in up to 50% of patients, and either			
Amiodarone	subclinical or overt hypothyroidism, each in up to 20% of patients. The fetus,			
Iodide (including iodine-containing	neonate, elderly and euthyroid patients with underlying thyroid disease (e.g.,			
radiographic contrast agents)	Hashimoto's thyroiditis or with Grave's disease previously treated with			
Lithium	radioiodine or surgery) are among those individuals who are particularly			
Methimazole	susceptible to iodine-induced hypothyroidism. Oral cholecystographic agents and			
Propylthiouracil (PTU)	amiodarone are slowly excreted, producing more prolonged hypothyroidism than			
Sulfonamides	parenterally administered iodinated contrast agents. Long-term			
Tolbutamide	aminoglutethimide therapy may minimally decrease T ₄ and T ₃ levels and increase			
	TSH, although all values remain within normal limits in most patients.			

Drugs that may increase thyroid hormone secretion, which may result in hyperthyroidism				
Amiodarone		contain pharmacologic amounts of iodide may cause		
Iodide (including iodine-containing	hyperthyroidism in euthyroid patients with Grave's disease previously treated			
radiographic contrast agents)	with antithyroid drugs or in euthyroid patients with thyroid autonomy (e.g.,			
	multinodular goiter or hyperfunctioning thyroid adenoma). Hyperthyroidism may			
	develop over several weeks and may persist for several months after therapy			
	discontinuation. Ami	odarone may induce hyperthyroidism by causing thyroiditis.		
Drugs that may		n, which may result in hypothyroidism		
Antacids		educe the efficacy of levothyroxine by binding and delaying		
- Aluminum & Magnesium	or preventing absorpti	on, potentially resulting in hypothyroidism. Calcium		
Hydroxides	carbonate may form a	n insoluble chelate with levothyroxine, and ferrous sulfate		
Simethicone	likely forms a ferric-tl	hyroxine complex. Administer levothyroxine at least 4		
Bile Acid Sequestrants	hours apart from these			
- Cholestyramine	•			
- Colestipol				
Calcium Carbonate				
Cation Exchange Resins				
- Kayexalate				
Ferrous Sulfate				
Sucralfate				
	erum transport - but	FT4 concentration remains normal; and therefore, the		
Diugs that may areer 14 and 13.		ins euthyroid		
Drugs that may increase serum T		Drugs that may decrease serum TBG concentration		
Clofibrate		Androgens / Anabolic Steroids		
Estrogen-containing oral contracept	ives	Asparaginase		
Estrogens (oral)		Glucocorticoids		
Heroin / Methadone		Slow-Release Nicotinic Acid		
5-Fluorouracil				
Mitotane				
Tamoxifen				
Drugs that may cause protein-bin	ding site displacement			
Furosemide (> 80 mg IV)		se agents with levothyroxine results in an initial transient		
Heparin		inued administration results in a decrease in serum T ₄ and		
Hydantoins	normal FT4 and TSH	concentrations and, therefore, patients are clinically		
Non Steroidal Anti-Inflammatory	euthyroid. Salicylates inhibit binding of T ₄ and T ₃ to TBG and transthyretin. An			
Drugs	initial increase in serum FT ₄ is followed by return of FT ₄ to normal levels with			
- Fenamates		serum salicylate concentrations, although total-T ₄ levels		
Phenylbutazone may decrease by as much as 30%.				
Salicylates (> 2 g/day)	<u> </u>			
Drugs that may alter T ₄ and T ₃ metabolism				
Drugs that may increase hepatic metabolism, which may result in hypothyroidism				
Carbamazepine		microsomal drug-metabolizing enzyme activity may cause		
Hydantoins		radation of levothyroxine, resulting in increased		
Phenobarbital	levothyroxine requirements. Phenytoin and carbamazepine reduce serum protein			
Rifampin		ine, and total- and free- T ₄ may be reduced by 20% to 40%,		
	but most patients have	e normal serum TSH levels and are clinically euthyroid.		

Drugs that may decrease T ₄ 5'-dei	odinase activity
Amiodarone	Administration of these enzyme inhibitors decreases the peripheral conversion of
Beta-adrenergic antagonists	T_4 to T_3 , leading to decreased T_3 levels. However, serum T_4 levels are usually
- (e.g., Propranolol > 160 mg/day)	normal but may occasionally be slightly increased. In patients treated with large
Glucocorticoids	doses of propranolol (> 160 mg/day), T ₃ and T ₄ levels change slightly, TSH levels
- (e.g., Dexamethasone $\geq 4 \text{ mg/day}$)	remain normal, and patients are clinically euthyroid. It should be noted that
Propylthiouracil (PTU)	actions of particular beta-adrenergic antagonists may be impaired when the
r ropymmouruem (r r e)	hypothyroid patient is converted to the euthyroid state. Short-term administration
1	of large doses of glucocorticoids may decrease serum T ₃ concentrations by 30%
	with minimal change in serum T ₄ levels. However, long-term glucocorticoid
	therapy may result in slightly decreased T ₃ and T ₄ levels due to decreased TBG
	production (see above).
	Miscellaneous
Anticoagulants (oral)	Thyroid hormones appear to increase the catabolism of vitamin K-dependent
- Coumarin Derivatives	clotting factors, thereby increasing the anticoagulant activity of oral
- Indandione Derivatives	anticoagulants. Concomitant use of these agents impairs the compensatory
	increases in clotting factor synthesis. Prothrombin time should be carefully
	monitored in patients taking levothyroxine and oral anticoagulants and the dose
	of anticoagulant therapy adjusted accordingly.
Antidepressants	Concurrent use of tri/tetracyclic antidepressants and levothyroxine may increase
- Tricyclics (e.g., Amitriptyline)	the therapeutic and toxic effects of both drugs, possibly due to increased receptor
- Tetracyclics (e.g., Maprotiline)	sensitivity to catecholamines. Toxic effects may include increased risk of cardiac
- Selective Serotonin Reuptake	arrhythmias and CNS stimulation; onset of action of tricyclics may be
Inhibitors	accelerated. Administration of sertraline in patients stabilized on levothyroxine
(SSRIs; e.g., Sertraline)	may result in increased levothyroxine requirements.
Antidiabetic Agents	Addition of levothyroxine to antidiabetic or insulin therapy may result in
- Biguanides	increased antidiabetic agent or insulin requirements. Careful monitoring of
- Meglitinides	diabetic control is recommended, especially when thyroid therapy is started,
- Sulfonylureas	changed, or discontinued.
- Thiazolidinediones	
- Insulin	
Cardiac Glycosides	Serum digitalis glycoside levels may be reduced in hyperthyroidism or when the
	hypothyroid patient is converted to the euthyroid state. Therapeutic effect of
	digitalis glycosides may be reduced.
Cytokines	Therapy with interferon-α has been associated with the development of
- Interferon-α	antithyroid microsomal antibodies in 20% of patients and some have transient
- Interleukin-2	hypothyroidism, hyperthyroidism, or both. Patients who have antithyroid
İ	antibodies before treatment are at higher risk for thyroid dysfunction during
<u> </u>	treatment. Interleukin-2 has been associated with transient painless thyroiditis in
	20% of patients. Interferon-β and -γ have not been reported to cause thyroid
}	dysfunction.
Growth Hormones	Excessive use of thyroid hormones with growth hormones may accelerate
- Somatrem	epiphyseal closure. However, untreated hypothyroidism may interfere with
- Somatropin	growth response to growth hormone.
Ketamine	Concurrent use may produce marked hypertension and tachycardia; cautious
	administration to patients receiving thyroid hormone therapy is recommended.
Methylxanthine Bronchodilators	Decreased theophylline clearance may occur in hypothyroid patients; clearance
- (e.g., Theophylline)	returns to normal when the euthyroid state is achieved.
Radiographic Agents	Thyroid hormones may reduce the uptake of ¹²³ I, ¹³¹ I, and ^{99m} Tc.
<u> </u>	
Sympathomimetics	Concurrent use may increase the effects of sympathomimetics or thyroid
	hormone. Thyroid hormones may increase the risk of coronary insufficiency
	when sympathomimetic agents are administered to patients with coronary artery disease.
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Chloral Hydrate	These agents have been associated with thyroid hormone and/or TSH level
Diazepam	alterations by various mechanisms.
Ethionamide	
Lovastatin	
Metoclopramide	
6-Mercaptopurine	
Nitroprusside	
Para-aminosalicylate sodium	
Perphenazine	
Resorcinol (excessive topical use)	
Thiazide Diuretics	

<u>Oral anticoagulants</u>- Levothyroxine increases the response to oral anticoagulant therapy. Therefore, a decrease in the dose of anticoagulant may be warranted with correction of the hypothyroid state or when the SYNTHROID dose is increased. Prothrombin time should be closely monitored to permit appropriate and timely dosage adjustments (see **Table 2**).

<u>Digitalis glycosides</u>- The therapeutic effects of digitalis glycosides may be reduced by levothyroxine. Serum digitalis glycoside levels may be decreased when a hypothyroid patient becomes euthyroid, necessitating an increase in the dose of digitalis glycosides (see **Table 2**).

Drug-Food Interactions – Consumption of certain foods may affect levothyroxine absorption thereby necessitating adjustments in dosing. Soybean flour (infant formula), cotton seed meal, walnuts, and dietary fiber may bind and decrease the absorption of levothyroxine sodium from the GI tract.

Drug-Laboratory Test Interactions – Changes in TBG concentration must be considered when interpreting T₄ and T₃ values, which necessitates measurement and evaluation of unbound (free) hormone and/or determination of the free T₄ index (FT₄I). Pregnancy, infectious hepatitis, estrogens, estrogen-containing oral contraceptives, and acute intermittent porphyria increase TBG concentrations. Decreases in TBG concentrations are observed in nephrosis, severe hypoproteinemia, severe liver disease, acromegaly, and after androgen or corticosteroid therapy (see also **Table 2**). Familial hyper- or hypo-thyroxine binding globulinemias have been described, with the incidence of TBG deficiency approximating 1 in 9000.

Carcinogenesis, Mutagenesis, and Impairment of Fertility – Animal studies have not been performed to evaluate the carcinogenic potential, mutagenic potential or effects on fertility of levothyroxine. The synthetic T_4 in SYNTHROID is identical to that produced naturally by the human thyroid gland. Although there has been a reported association between prolonged thyroid hormone therapy and breast cancer, this has not been confirmed. Patients receiving SYNTHROID for appropriate clinical indications should be titrated to the lowest effective replacement dose.

Pregnancy – Category A – Studies in women taking levothyroxine sodium during pregnancy have not shown an increased risk of congenital abnormalities. Therefore, the possibility of fetal harm appears remote. SYNTHROID should not be discontinued during pregnancy and hypothyroidism diagnosed during pregnancy should be promptly treated.

Hypothyroidism during pregnancy is associated with a higher rate of complications, including spontaneous abortion, pre-eclampsia, stillbirth and premature delivery. Maternal hypothyroidism may have an adverse effect on fetal and childhood growth and development. During pregnancy, serum T₄ levels may decrease and serum TSH levels increase to values outside the normal range. Since elevations in serum TSH may occur as early as 4 weeks gestation, pregnant women taking SYNTHROID should have their TSH measured during each trimester. An elevated serum TSH level should be corrected by an increase in the dose of SYNTHROID. Since postpartum TSH levels are similar to preconception values, the SYNTHROID dosage should return to the prepregnancy dose immediately after delivery. A serum TSH level should be obtained 6-8 weeks postpartum.

Thyroid hormones cross the placental barrier to some extent as evidenced by levels in cord blood of athyreotic fetuses being approximately one-third maternal levels. Transfer of thyroid hormone from the mother to the fetus, however, may not be adequate to prevent *in utero* hypothyroidism.

Nursing Mothers – Although thyroid hormones are excreted only minimally in human milk, caution should be exercised when SYNTHROID is administered to a nursing woman. However, adequate replacement doses of levothyroxine are generally needed to maintain normal lactation.

Pediatric Use

General

The goal of treatment in pediatric patients with hypothyroidism is to achieve and maintain normal intellectual and physical growth and development.

The initial dose of levothyroxine varies with age and body weight (see **DOSAGE AND ADMINISTRATION**, **Table 3**). Dosing adjustments are based on an assessment of the individual patient's clinical and laboratory parameters (see **PRECAUTIONS**, **Laboratory Tests**).

In children in whom a diagnosis of permanent hypothyroidism has not been established, it is recommended that levothyroxine administration be discontinued for a 30-day trial period, but only after the child is at least 3 years of age. Serum T₄ and TSH levels should then be obtained. If the T₄ is low and the TSH high, the diagnosis of permanent hypothyroidism is established, and levothyroxine therapy should be reinstituted. If the T₄ and TSH levels are normal, euthyroidism may be assumed and, therefore, the hypothyroidism can be considered to have been transient. In this instance, however, the physician should carefully monitor the child and repeat the thyroid function tests if any signs or symptoms of hypothyroidism develop. In this setting, the clinician should have a high index of suspicion of relapse. If the results of the levothyroxine withdrawal test are inconclusive, careful follow-up and subsequent testing will be necessary.

Since some more severely affected children may become clinically hypothyroid when treatment is discontinued for 30 days, an alternate approach is to reduce the replacement dose of levothyroxine by half during the 30-day trial period. If, after 30 days, the serum TSH is elevated above 20 mU/L, the diagnosis of permanent hypothyroidism is confirmed, and full replacement therapy should be resumed. However, if the serum TSH has not risen to greater than 20 mU/L, levothyroxine treatment should be discontinued for another 30-day trial period followed by repeat serum T₄ and TSH testing.

The presence of concomitant medical conditions should be considered in certain clinical circumstances and, if present, appropriately treated (see PRECAUTIONS).

Congenital Hypothyroidism (see PRECAUTIONS, Laboratory Tests and DOSAGE AND ADMINISTRATION)

Rapid restoration of normal serum T₄ concentrations is essential for preventing the adverse effects of congenital hypothyroidism on intellectual development as well as on overall physical growth and maturation. Therefore, SYNTHROID therapy should be initiated immediately upon diagnosis and is generally continued for life.

During the first 2 weeks of SYNTHROID therapy, infants should be closely monitored for cardiac overload, arrhythmias, and aspiration from avid suckling.

The patient should be monitored closely to avoid undertreatment or overtreatment. Undertreatment may have deleterious effects on intellectual development and linear growth. Overtreatment has been associated with craniosynostosis in infants, and may adversely affect the tempo of brain maturation and accelerate the bone age with resultant premature closure of the epiphyses and compromised adult stature.

Acquired Hypothyroidism in Pediatric Patients

The patient should be monitored closely to avoid undertreatment and overtreatment. Undertreatment may result in poor school performance due to impaired concentration and slowed mentation and in reduced adult height. Overtreatment may accelerate the bone age and result in premature epiphyseal closure and compromised adult stature.

Treated children may manifest a period of catch-up growth, which may be adequate in some cases to normalize adult height. In children with severe or prolonged hypothyroidism, catch-up growth may not be adequate to normalize adult height.

Geriatric Use

Because of the increased prevalence of cardiovascular disease among the elderly, levothyroxine therapy should not be initiated at the full replacement dose (see WARNINGS, PRECAUTIONS, and DOSAGE AND ADMINISTRATION).

ADVERSE REACTIONS

Adverse reactions associated with levothyroxine therapy are primarily those of hyperthyroidism due to therapeutic overdosage (see **PRECAUTIONS** and **OVERDOSAGE**). They include the following:

General: fatigue, increased appetite, weight loss, heat intolerance, fever, excessive sweating;

Central nervous system: headache, hyperactivity, nervousness, anxiety, irritability,

emotional lability, insomnia;

Musculoskeletal: tremors, muscle weakness;

Cardiovascular: palpitations, tachycardia, arrhythmias, increased pulse and blood

pressure, heart failure, angina, myocardial infarction, cardiac arrest;

Respiratory: dyspnea;

Gastrointestinal: diarrhea, vomiting, abdominal cramps and elevations in liver function

tests;

Dermatologic: hair loss, flushing;

Endocrine: decreased bone mineral density;

Reproductive: menstrual irregularities, impaired fertility.

Pseudotumor cerebri and slipped capital femoral epiphysis have been reported in children receiving levothyroxine therapy. Overtreatment may result in craniosynostosis in infants and premature closure of the epiphyses in children with resultant compromised adult height.

Seizures have been reported rarely with the institution of levothyroxine therapy.

Inadequate levothyroxine dosage will produce or fail to ameliorate the signs and symptoms of hypothyroidism.

Hypersensitivity reactions to inactive ingredients have occurred in patients treated with thyroid hormone products. These include urticaria, pruritus, skin rash, flushing, angioedema, various GI symptoms (abdominal pain, nausea, vomiting and diarrhea), fever, arthralgia, serum sickness and wheezing. Hypersensitivity to levothyroxine itself is not known to occur.

OVERDOSAGE

The signs and symptoms of overdosage are those of hyperthyroidism (see **PRECAUTIONS** and **ADVERSE REACTIONS**). In addition, confusion and disorientation may occur. Cerebral embolism, shock, coma, and death have been reported. Seizures have occurred in a child ingesting 18 mg of levothyroxine. Symptoms may not necessarily be evident or may not appear until several days after ingestion of levothyroxine sodium.

Treatment of Overdosage

Levothyroxine sodium should be reduced in dose or temporarily discontinued if signs or symptoms of overdosage occur.

Acute Massive Overdosage – This may be a life-threatening emergency, therefore, symptomatic and supportive therapy should be instituted immediately. If not contraindicated (e.g., by seizures, coma, or loss of the gag reflex), the stomach should be emptied by emesis or gastric lavage to decrease gastrointestinal absorption. Activated charcoal or cholestyramine may also be used to decrease absorption. Central and peripheral increased sympathetic

activity may be treated by administering β -receptor antagonists, e.g., propranolol, provided there are no medical contraindications to their use. Provide respiratory support as needed; control congestive heart failure and arrhythmia; control fever, hypoglycemia, and fluid loss as necessary. Large doses of antithyroid drugs (e.g., methimazole or propylthiouracil) followed in one to two hours by large doses of iodine may be given to inhibit synthesis and release of thyroid hormones. Glucocorticoids may be given to inhibit the conversion of T_4 to T_3 . Plasmapheresis, charcoal hemoperfusion and exchange transfusion have been reserved for cases in which continued clinical deterioration occurs despite conventional therapy. Because T_4 is highly protein bound, very little drug will be removed by dialysis.

DOSAGE AND ADMINISTRATION

General Principles

The goal of replacement therapy is to achieve and maintain a clinical and biochemical euthyroid state. The goal of suppressive therapy is to inhibit growth and/or function of abnormal thyroid tissue. The dose of SYNTHROID that is adequate to achieve these goals depends on a variety of factors including the patient's age, body weight, cardiovascular status, concomitant medical conditions, including pregnancy, concomitant medications, and the specific nature of the condition being treated (see WARNINGS and PRECAUTIONS). Hence, the following recommendations serve only as dosing guidelines. Dosing must be individualized and adjustments made based on periodic assessment of the patient's clinical response and laboratory parameters (see PRECAUTIONS, Laboratory Tests).

SYNTHROID is administered as a single daily dose, preferably one-half to one-hour before breakfast. SYNTHROID should be taken at least 4 hours apart from drugs that are known to interfere with its absorption (see **PRECAUTIONS**, **Drug Interactions**).

Due to the long half-life of levothyroxine, the peak therapeutic effect at a given dose of levothyroxine sodium may not be attained for 4-6 weeks.

Caution should be exercised when administering SYNTHROID to patients with underlying cardiovascular disease, to the elderly, and to those with concomitant adrenal insufficiency (see **PRECAUTIONS**).

Specific Patient Populations

Hypothyroidism in Adults and in Children in Whom Growth and Puberty are Complete (see WARNINGS and PRECAUTIONS, Laboratory Tests)

Therapy may begin at full replacement doses in otherwise healthy individuals less than 50 years old and in those older than 50 years who have been recently treated for hyperthyroidism or who have been hypothyroid for only a short time (such as a few months). The average full replacement dose of levothyroxine sodium is approximately 1.7 mcg/kg/day (e.g., 100-125 mcg/day for a 70 kg adult). Older patients may require less than 1 mcg/kg/day. Levothyroxine sodium doses greater than 200 mcg/day are seldom required. An inadequate response to daily doses \geq 300 mcg/day is rare and may indicate poor compliance, malabsorption, and/or drug interactions.

For most patients older than 50 years or for patients under 50 years of age with underlying cardiac disease, an initial starting dose of **25-50 mcg/day** of levothyroxine sodium is recommended, with gradual increments in dose at 6-8 week intervals, as needed. The recommended starting dose of levothyroxine sodium in elderly patients with cardiac disease is **12.5-25 mcg/day**, with gradual dose increments at 4-6 week intervals. The levothyroxine sodium dose is generally adjusted in 12.5-25 mcg increments until the patient with primary hypothyroidism is clinically euthyroid and the serum TSH has normalized.

In patients with severe hypothyroidism, the recommended initial levothyroxine sodium dose is 12.5-25 mcg/day with increases of 25 mcg/day every 2-4 weeks, accompanied by clinical and laboratory assessment, until the TSH level is normalized.

In patients with secondary (pituitary) or tertiary (hypothalamic) hypothyroidism, the levothyroxine sodium dose should be titrated until the patient is clinically euthyroid and the serum free- T_4 level is restored to the upper half of the normal range.

<u>Pediatric Dosage – Congenital or Acquired Hypothyroidism (see PRECAUTIONS, Laboratory Tests)</u>

General Principles

In general, levothyroxine therapy should be instituted at full replacement doses as soon as possible. Delays in diagnosis and institution of therapy may have deleterious effects on the child's intellectual and physical growth and development.

Undertreatment and overtreatment should be avoided (see PRECAUTIONS, Pediatric Use).

SYNTHROID may be administered to infants and children who cannot swallow intact tablets by crushing the tablet and suspending the freshly crushed tablet in a small amount (5-10 mL or 1-2 teaspoons) of water. This suspension can be administered by spoon or by dropper. **DO NOT STORE THE SUSPENSION**. Foods that decrease absorption of levothyroxine, such as soybean infant formula, should not be used for administering levothyroxine sodium tablets (see **PRECAUTIONS**, **Drug-Food Interactions**).

Newborns

The recommended starting dose of levothyroxine sodium in newborn infants is 10-15 mcg/kg/day. A lower starting dose (e.g., 25 mcg/day) should be considered in infants at risk for cardiac failure, and the dose should be increased in 4-6 weeks as needed based on clinical and laboratory response to treatment. In infants with very low (< 5 mcg/dL) or undetectable serum T₄ concentrations, the recommended initial starting dose is 50 mcg/day of levothyroxine sodium.

Infants and Children

Levothyroxine therapy is usually initiated at full replacement doses, with the recommended dose per body weight decreasing with age (see **Table 3**). However, in children with chronic or severe hypothyroidism, an initial dose of **25 mcg/day** of levothyroxine sodium is recommended with increments of 25 mcg every 2-4 weeks until the desired effect is achieved.

Hyperactivity in an older child can be minimized if the starting dose is one-fourth of the recommended full replacement dose, and the dose is then increased on a weekly basis by an amount equal to one-fourth the full-recommended replacement dose until the full recommended replacement dose is reached.

AGE	Daily Dose Per Kg Body Weight
0-3 months	10-15 mcg/kg/day
3-6 months	8-10 mcg/kg/day
6-12 months	6-8 mcg/kg/day
1-5 years	5-6 mcg/kg/day
6-12 years	4-5 mcg/kg/day
>12 years but growth and puberty incomplete	2-3 mcg/kg/day
Growth and puberty complete	1.7 mcg/kg/day

Pregnancy- Pregnancy may increase levothyroxine requirements (see PREGNANCY).

Laboratory Tests and Pediatric Use).

Subclinical Hypothyroidism- If this condition is treated, a lower levothyroxine sodium dose (e.g., 1 mcg/kg/day) than that used for full replacement may be adequate to normalize the serum TSH level. Patients who are not treated should be monitored yearly for changes in clinical status and thyroid laboratory parameters.

TSH Suppression in Well-differentiated Thyroid Cancer and Thyroid Nodules- The target level for TSH suppression in these conditions has not been established with controlled studies. In addition, the efficacy of TSH suppression for benign nodular disease is controversial. Therefore, the dose of SYNTHROID used for TSH suppression should be individualized based on the specific disease and the patient being treated.

In the treatment of well-differentiated (papillary and follicular) thyroid cancer, levothyroxine is used as an adjunct to surgery and radioiodine therapy. Generally, TSH is suppressed to <0.1 mU/L, and this usually requires a levothyroxine sodium dose of greater than 2 mcg/kg/day. However, in patients with high-risk tumors, the target level for TSH suppression may be <0.01 mU/L.

In the treatment of benign nodules and nontoxic multinodular goiter, TSH is generally suppressed to a higher target (e.g., 0.1 to either 0.5 or 1.0 mU/L) than that used for the treatment of thyroid cancer. Levothyroxine sodium is contraindicated if the serum TSH is already suppressed due to the risk of precipitating overt thyrotoxicosis (see CONTRAINDICATIONS, WARNINGS and PRECAUTIONS).

Myxedema Coma – Myxedema coma is a life-threatening emergency characterized by poor circulation and hypometabolism, and may result in unpredictable absorption of levothyroxine sodium from the gastrointestinal tract. Therefore, oral thyroid hormone drug products are not recommended to treat this condition. Thyroid hormone products formulated for intravenous administration should be administered.

HOW SUPPLIED

SYNTHROID® (levothyroxine sodium tablets, USP) are round, color coded, scored and debossed with "SYNTHROID" on one side and potency on the other side. They are supplied as follows:

Strength (mcg)	Color	NDC # for bottles of 100	NDC # for bottles of 1000	NDC # for unit dosecartons of 100
25	orange	0074-4341-13	0074-4341-19	
50	white	0074-4552-13	0074-4552-19	0074-4552-11
75	violet	0074-5182-13	0074-5182-19	0074-5182-11
88	olive	0074-6594-13	0074-6594-19	
100	yellow	0074-6624-13	0074-6624-19	0074-6624-11
112	rose	0074-9296-13	0074-9296-19	
125	brown	0074-7068-13	0074-7068-19	0074-7068-11
137	turquoise	0074-3727-13	0074-3727-19	
150	blue	0074-7069-13	0074-7069-19	0074-7069-11
175	lilac	0074-7070-13	0074-7070-19	
200	pink	0074-7148-13	0074-7148-19	0074-7148-11
300	green	0074-7149-13	0074-7149-19	

Storage Conditions

Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F) [see USP Controlled Room Temperature]. SYNTHROID tablets should be protected from light and moisture.

Revised: NEW



This is a representation of an electronic record that was signed electronically and this page is the manifestation of the electronic signature.

/s/

David Orloff 7/24/02 01:41:15 PM 

NDC 0074-4341-19
1000 TABLETS

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SYNTHROID®
(levothyroxine sodium tablets, USP)

25 mcg (0.025 mg)

Do not accept if seal over bottle opening is broken or missing.

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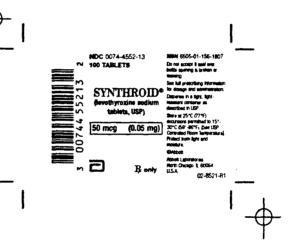
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North Chicago. I. 60064, USA.

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SYNTHROID

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SO mcg (0.05 mg)

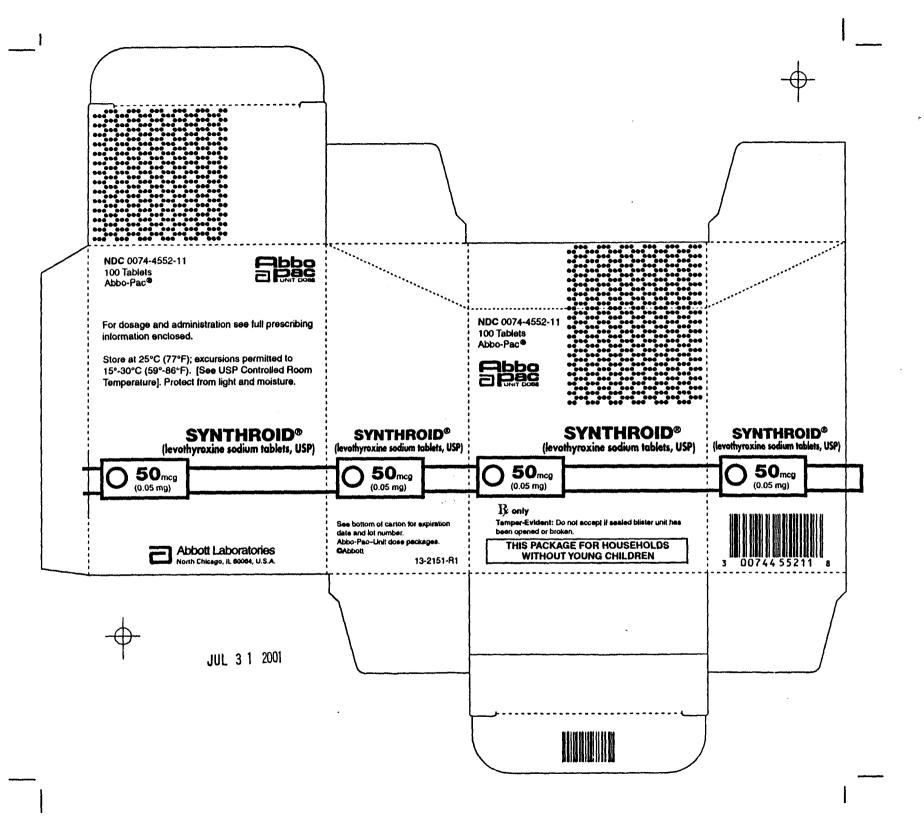
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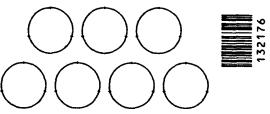


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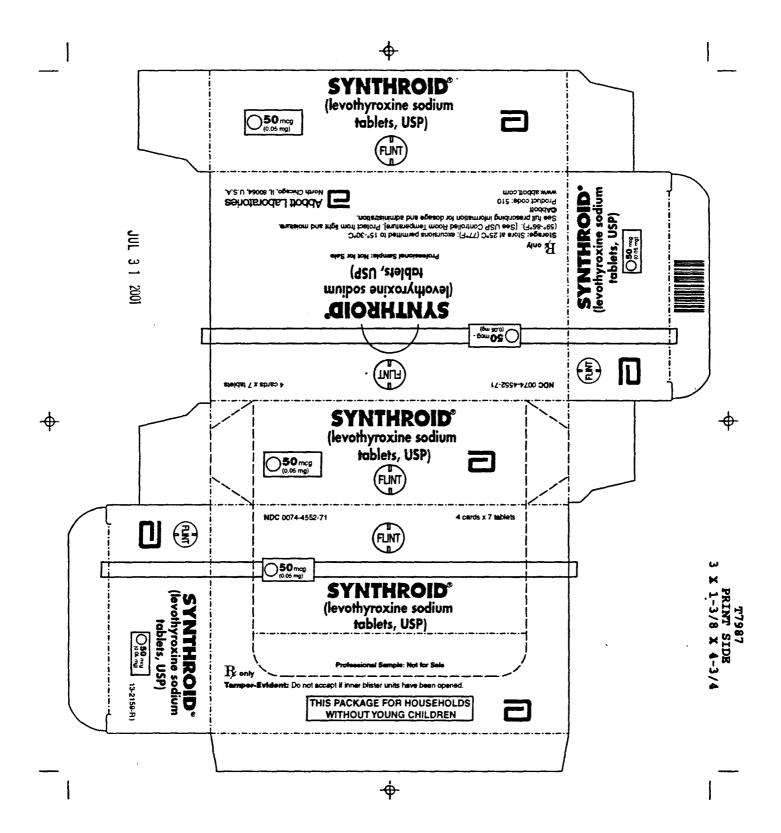
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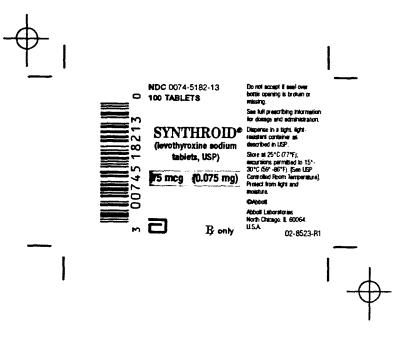
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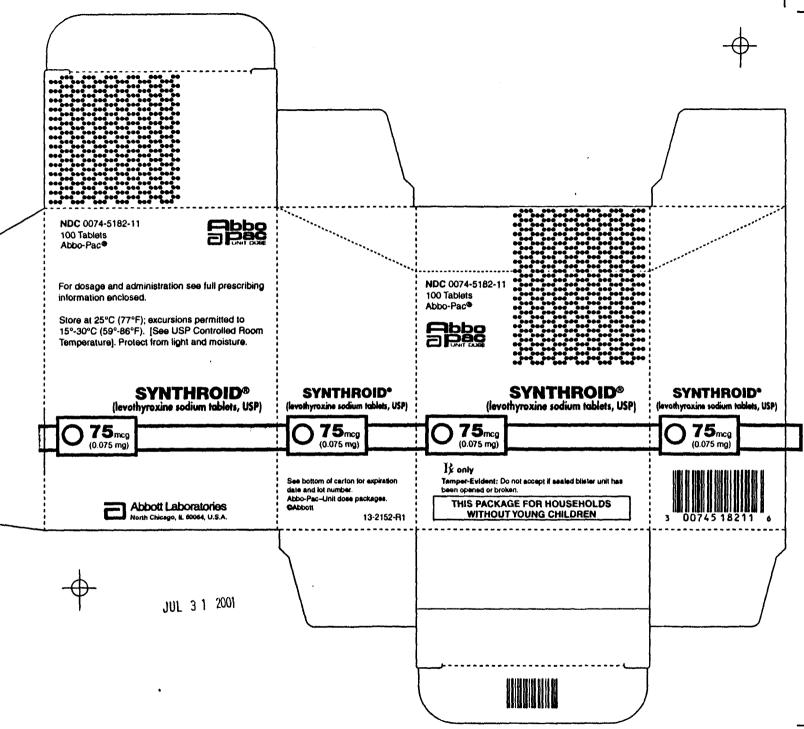
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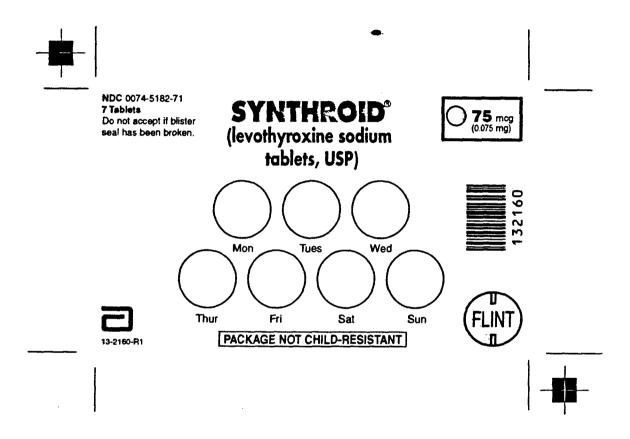




NDC 0074-5182-19 1000 TABLETS Do not accept if seal over bottle opening is broken or missing. See full prescribing information for dosage and administration. SYNTHROID® Dispense in a tight, light-resistant container as described in USP. (levothyroxine sodium tablets, USP) Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F), [See USP Controlled Room Temperature]. Protect from light and moisture. 75 mcg (0.075 mg) CAbbott Abbott Laboratories North Chicago, IL 60064, U.S.A. ${\bf R}$ only 02-8524-R1

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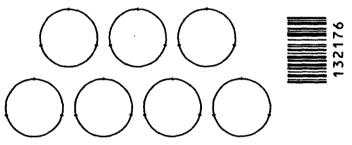




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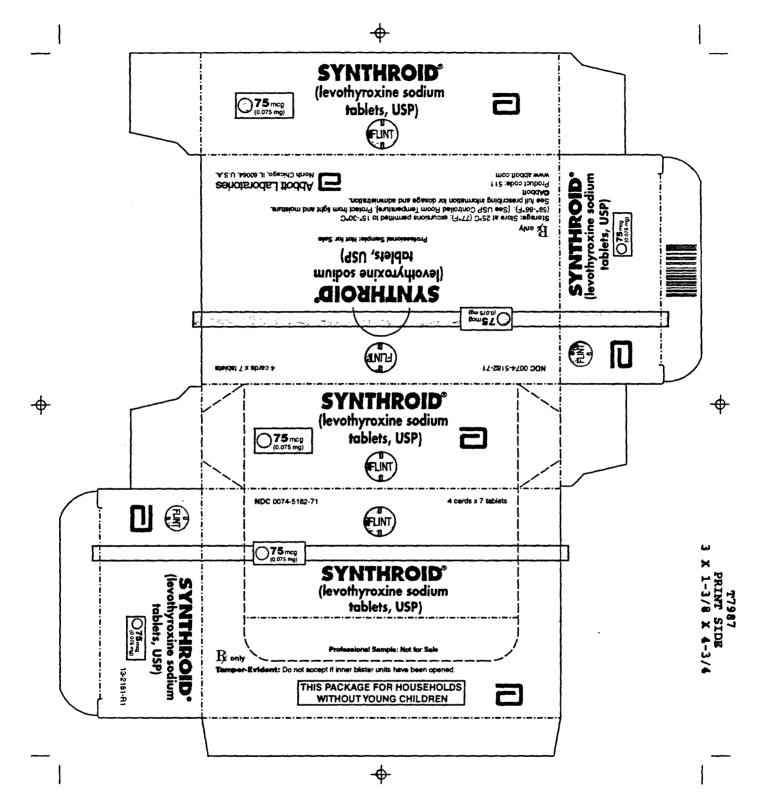
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Storage: Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F). [See USP Controlled Room Temperature]. Protect from light and moisture.



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13-2176-R1



NDC 0074-6594-19 1000 TABLETS

(levothyroxine sodium tablets, USP)

88 mcg (0.088 mg)

Do not accept if seal over bottle opening is broken or missing.

SYNTHROID®

See tull prescribing information for dosage and administration.

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Dispense in a tight, light-resistant container as described in USP.

Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F), (See USP Controlled Room Temperature). Protect from light and moisture.

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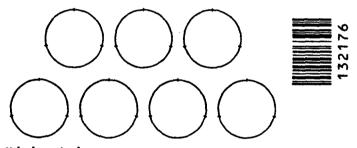
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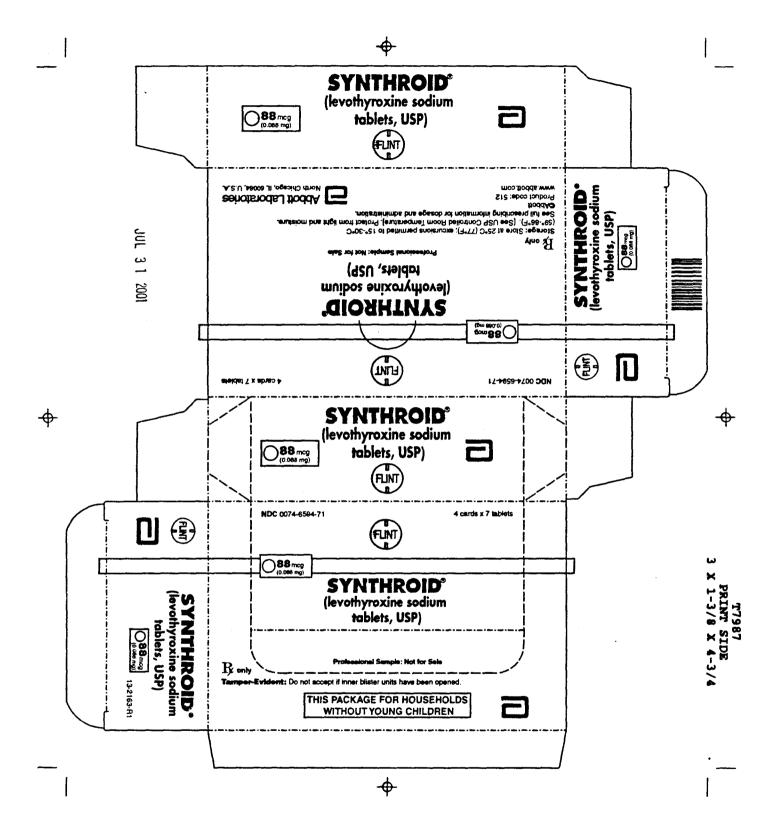
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Professional Sample: Not for Sale.

Storage: Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F). [See USP Controlled Room Temperature]. Protect from light and moisture.



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North Chicago, L 60064, U.S.A.





NDC 0074-6624-19 1000 TABLETS

SYNTHROID®

(levothyroxine sodium tablets, USP)

100 mcg (0.1 mg)

NSN 6505-01-042-9260

Do not accept if seal over bottle opening is broken or missing.

See full prescribing information for dosage and administration.

Dispense in a tight, light-resistant container as described in USP.

Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F). [See USP Controlled Room Temperature]. Protect from light and moisture.

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JUL 3 1 2001 NDC 0074-6624-11 100 Tablets Abbo-Pac[®] NDC 0074-6624-1 For dosage and administration see full prescribing 100 Tablets Abbo-Pac® information enclosed. Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F). [See USP Controlled Room Temperature]. Protect from light and moisture. SYNTHROID® (levothyroxine sodium tablets, USP) **SYNTHROID® SYNTHROID**° SYNTHROID* (levothyroxine sodium tablets, USP) (levothyroxine sodium tablets, USP) (levothyroxine sodium tablets, USP) 100mcg 100mcg 100_{mcg} 100mcg (0.1 mg) (0.1 mg) (0.1 mg) (0.1 mg) R only Tamper-Evident: Do not accept if sealed blister unit has been opened or broken. See bottom of carton for expiration date and lot number. Abbo-Pao--Unit dose packages. THIS PACKAGE FOR HOUSEHOLDS WITHOUT YOUNG CHILDREN Abbott Laboratories North Chicago, IL 60064, U.S.A. CAbbott 13-2153-R1

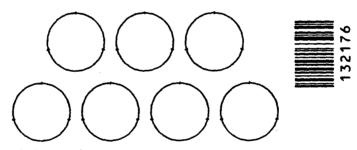


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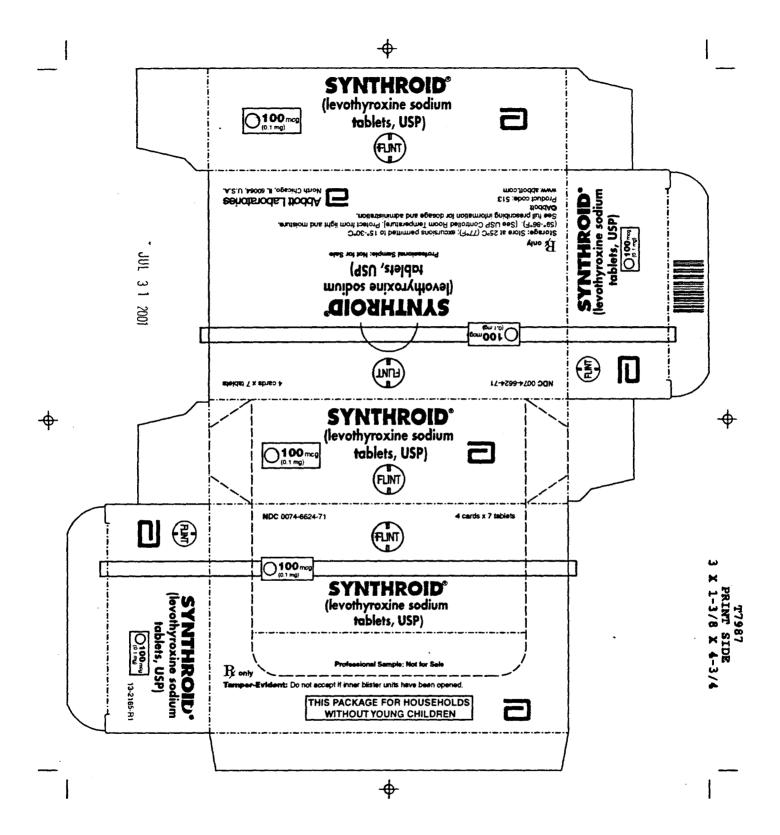
R only

Professional Sample: Not for Sale.

Storage: Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F). [See USP Controlled Room Temperature]. Protect from light and moisture.



Abbott Laboratories
North Chicago, L 60064, U.S.A.



NDC 0074-9296-13
100 TABLETS

Do not accept 8 send over bottle opening is broken or micring.

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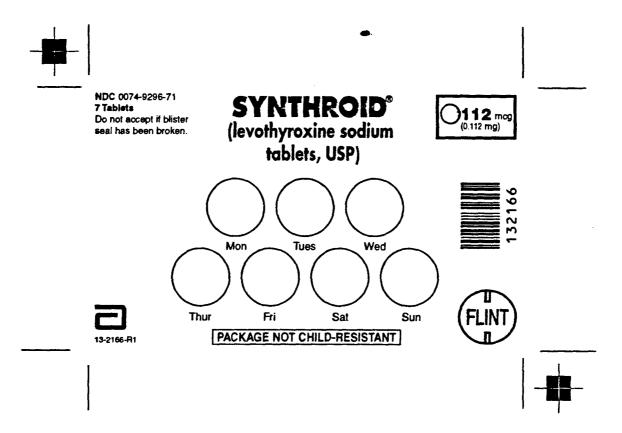
Dispense in a tight, light-metical container as described in ISP.

Store in 25°C (27°T); Son in 25°C (27°T); S

NDC 0074-9296-19 Do not accept if seal over 1000 TABLETS bottle opening is broken or missing. See full prescribing information for dosage and administration. SYNTHROID® Dispense in a tight, light-resistant container as described in USP. (levothyroxine sodium tablets, USP) Store at 25°C (77°F); store at 25°C (7°F); excursions permitted to 15°-30°C (59°-86°F), [See USP Controlled Room Temperature], Protect from light and moisture. 112 mcg (0.112 mg) **©**Abbott Abbott Laboratories North Chicago, IL 60064, U.S.A.

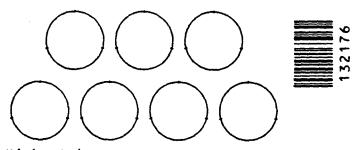
R only

02-8530-R1

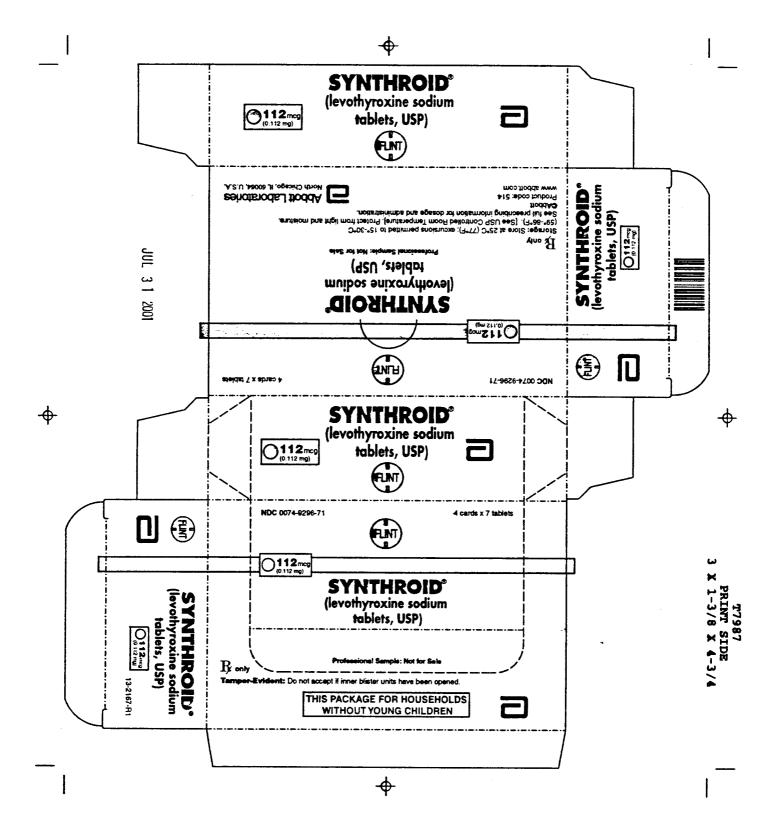


Professional Sample: Not for Sale.

Storage: Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F). [See USP Controlled Room Temperature]. Protect from light and moisture.



Abbott Laboratories
North Chicago, L 60064, U.S.A.



NDC 0074-7068-13
100 TABLETS

To not accept it sent over britis opening is troken or missing.

SYNTHROID

(levothyroxine sodium tablets, USP)

125 mcg (0.125 mg)

R only

R only

O2-8531-R1

NDC 0074-7068-19 1000 TABLETS Do not accept if seal over bottle opening is broken or missing. See full prescribing Information for dosage and administration. SYNTHROID® Dispense in a tight, light-resistant container as described in USP. (levothyroxine sodium tablets, USP) Store at 25°C (77°F); excursions permitted to 15°:30°C (59°-86°F). (See 125 mcg (0.125 mg) USP Controlled Room
Temperature]. Protect from light and moisture. **C**Abbott Abbott Laboratories North Chicago, IL 60064, U.S.A. 02-8532-R1

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	List No. 7088 Project from light and mostlum. SYNTHROID® (levothyroxime soditum tablets, USP) 125 mcg Absort tubersores Despo. 8. 68864, U.S.A. 886736-R1	XXXXXXXXX EXP XX/XX	EXP XXXX	List Ne. 7006 Pound form form or months SYNTHROID (Isvolthyroxing sodium tablete, USP) 125 mcg Tablete, USP	
	List No. 7008 Protect from light and mointure. SYNTHROID® (Nevothyrox ine sodium tablets, USP) 125 mcg Aldem Laboragore Adden Laboragore 88-5735-R1	XXXXXXXXX EXP XX/XX	XXXXXXXXXXX EXP XX/XX	Lat hot of the front of the fro	
*					
	Lie No. 7008 Prosect from light and monthly SYNTHROID® (levothyrox ine sodium tablets, USP) 125 mcg hoom chespo, 1 6004, USA 88-6736-81	XXXXXXXXX EXP XXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	La North The Clubs SYNTHROID (Involving thes 1025 mcg Liberty Leonening Application of the Control Applicatio	
	Last No. 7008 Protect from light and moisture. SYNTHROID® (levothyroxine sodium tablets, USP) 125 mog Abbet Laborstores Nom Orcape, 8 6004, U.S.A. 98-578-471	XXXXXXXXX EXP XXXX	ΧΧΧΧΧΧΧΧΧΧ ΕΧΡ ΧΧΛΧΧ.	Let No. 2008 SYNTHROID SYNTHROID SYNTHROID STANDARD AND THE COMMENTER STAND	
	List No. 7088 Protect from hight and moisture SYNTHROID* (levesthyrex line seedium tablests, USP) 125 mcg Abbot Libersones Inom Chaspe, I 2004, U.S.A 98-5735-81	XXXXXXXXX EXP XX/XX	EXP XXXXX	Let No. 7088 Proact from toys and moseure. SVATHROUDS SVATHROUDS Clevelar USP) 125 mog Tableta, USP) 125 mog	
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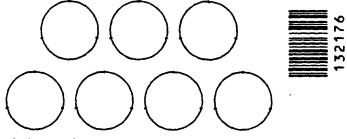
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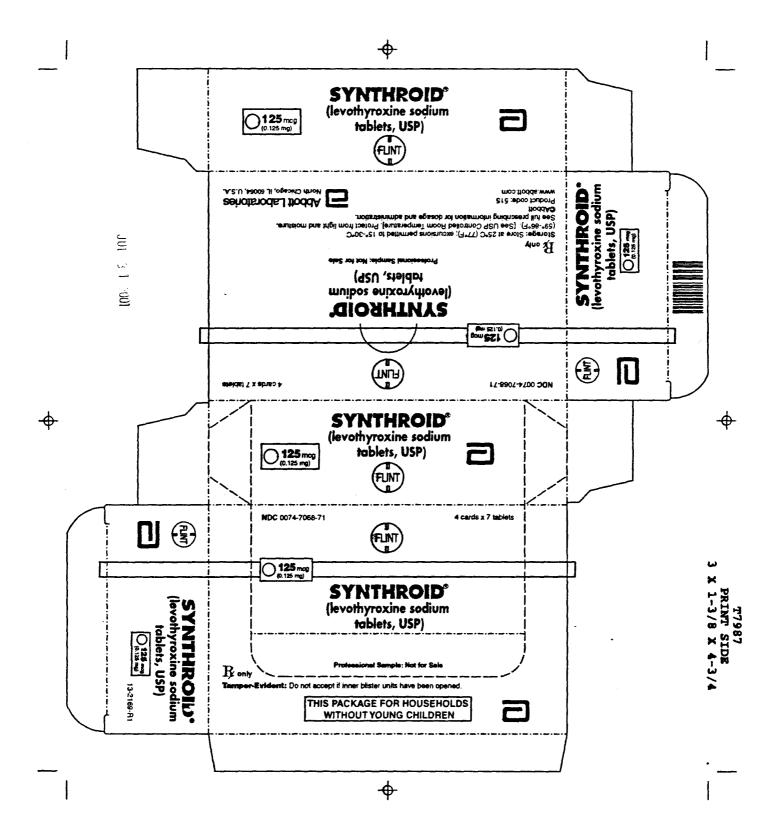
R only

Professional Sample: Not for Sale.

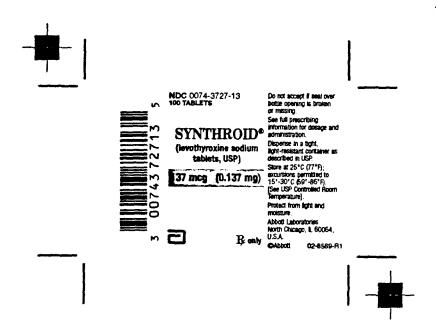
Storage: Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F). [See USP Controlled Room Temperature]. Protect from light and moisture.



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North Chicago, L 60064, U.S.A.



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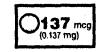
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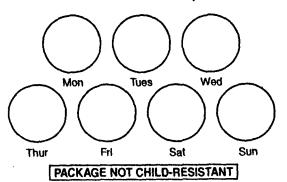




NDC 0074-3727-71 7 Tablets Do not accept if blister seal has been broken.

SYNTHROID® (levothyroxine sodium tablets, USP)











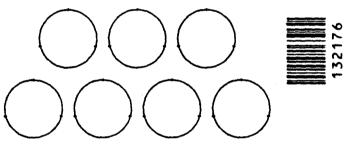
13-2191-R1



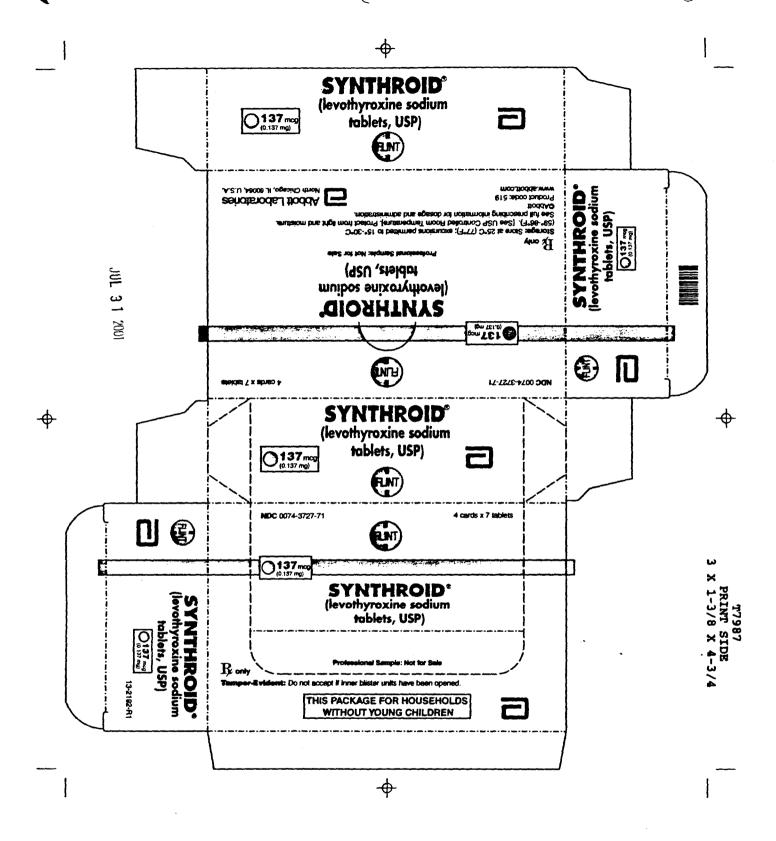
R only

Professional Sample: Not for Sale.

Storage: Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F). [See USP Controlled Room Temperature]. Protect from light and moisture.



Abbott Laboratories
North Chicago, L 60064, U.S.A.





0074706919

NDC 0074-7069-19 1000 TABLETS NSN 6505-01-153-3338

Do not accept if seal over bottle opening is broken or missing.

SYNTHROID®

(levothyroxine sodium tablets, USP)

150 mcg (0.15 mg)

See full prescribing information for dosage and administration. Dispense in a tight,

Dispense in a tight, light-resistant container as described in USP,

Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F). [See USP Controlled Room Temperature]. Protect from light and moisture.

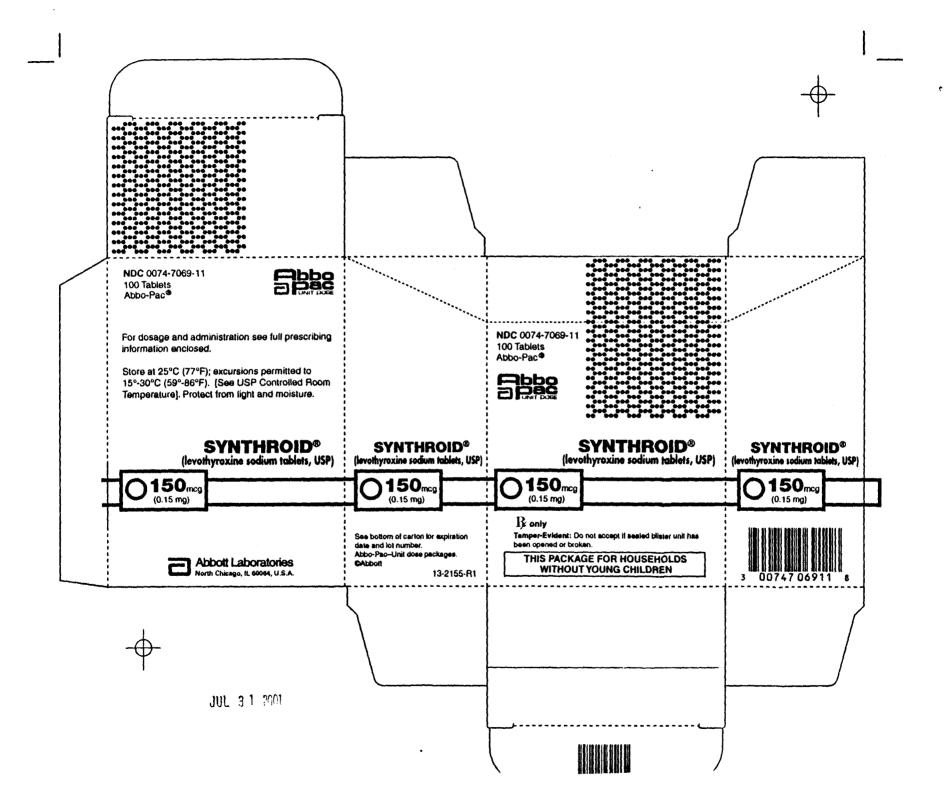
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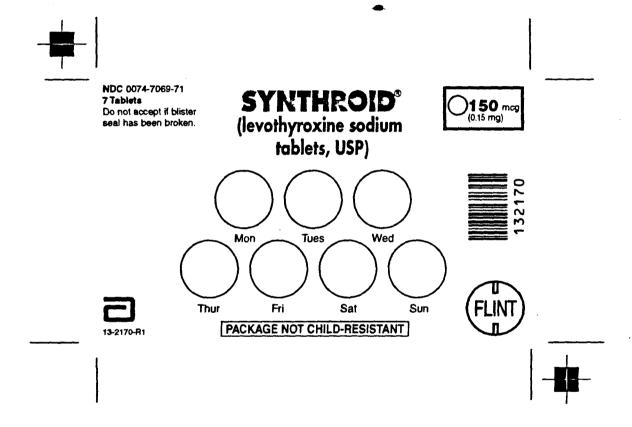
Abbott Laboratories North Chicago, IL 60064, U.S.A.

R only

02-8534-R1

*******	Lar No. 7000 Protect from high and measure SYNTHROID® (levethyroz inse socialism tablets, USP) 150 meg Abbert Laboratorias 86-5736-R)	XXXXXXXXX EXP XX/XX	ΧΧΧΧΧΧΧΧΧ ΕΧΡ ΧΧ/ΧΧ	List No. 7000 STATE THE POINT OF THE POINT	
	List No. 7009 Protect from light and moisture SYNTHROID® (levrothyrozine sodium tablets, USP) 150 mog Abbort Laborsons 10 Abbo	XXXXXXXX EXP XXXX	XXXXXXXXXXX EXP XX/XX	Las No. 7000 Propert from fight and mostere. SYNTHROID (Saving State of Saving Saving State of Saving State of Saving Savi	
	Protect from tight and moisture. SYNTHROID® (levothyroutine accidium tabelets, USP) 150 mog About Labersones Horm Chicago, 8, 80064, U.S.A. 86-5736-R1	XXXXXXXX EXP XXXX	EXP XXXX	Let No. 7089 Protect from Ings and morsave Protect from Ings and morsave Clevedtrynoxine seedlum Lisberts, USS 7 [50 mog	
	List No. 7008 Proact from light and moisture. SYNTHROID® (levesthyroxine acelium tablets, USP) 150 mog Abbotts, USP, 150 mog Abbotts, Bebretories Be-5736-R1	XXXXXXXXX EXP XXXX	ΧΧΧΧΧΧΧΧΧ ΕΧΡ ΧΧ/ΧΧ	Protect from they have been but into the most protect of the most	
	Lan No 7069 Protect from light and mostlure. SYNTHROID® (Nevothyroxine sodium zableta, USP) 150 mcg Asbon Laborstores North Cheaga, 8, 80084, U.S.A. 99-5736-R1	XXXXXXXXX EXP XX/XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Let No. 7099 SYNCH THOUSE SYNCH THOUSE SYNCH THOUSE SYNCH THOUSE Tablets, USP) 150 mcg Check USP	
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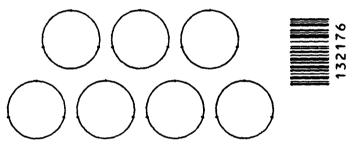




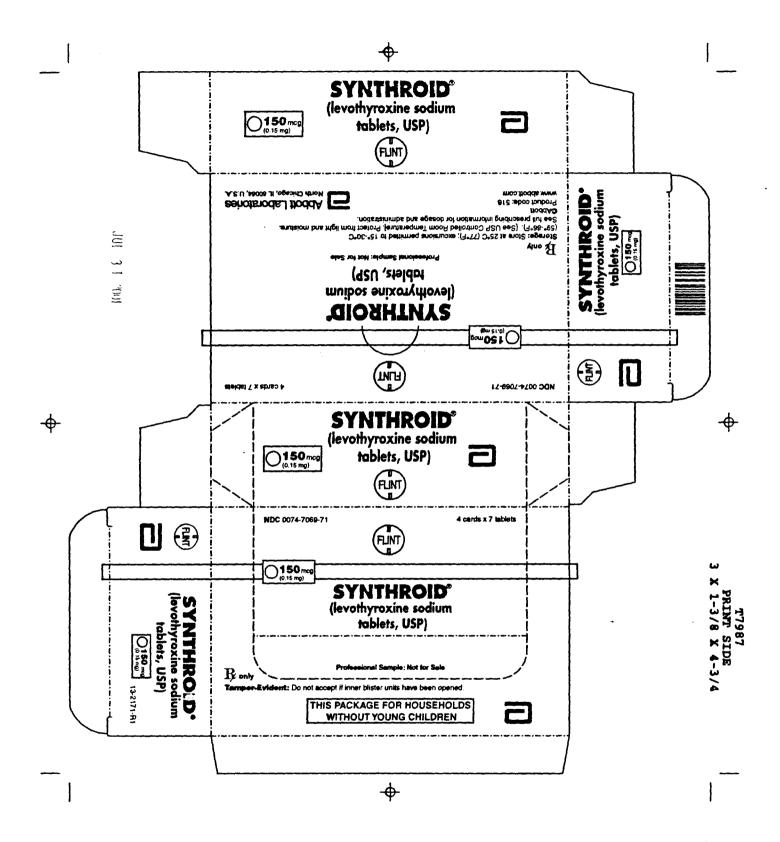
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Professional Sample: Not for Sale.

Storage: Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F). [See USP Controlled Room Temperature]. Protect from light and moisture.



Abbott Laboratories
North Chicago, L 60064, U.S.A.





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NDC 0074-7070-19 1000 TABLETS

SYNTHROID®

(levothyroxine sodium tablets, USP)

175 mcg (0.175 mg)

USP Controlled Room

CAbbott

 \mathbf{R} only

02-8536-R1

Do not accept if seal over bottle opening is broken or missing.

See full prescribing information for dosage and administration.

Dispense in a tight, light-resistant container as described in USP.

Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F). [See Temperature). Protect from light and moisture.

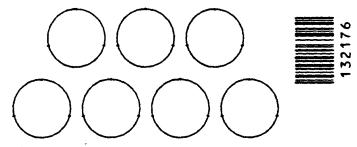
Abbott Laboratories North Chicago, IL 60064, U.S.A.



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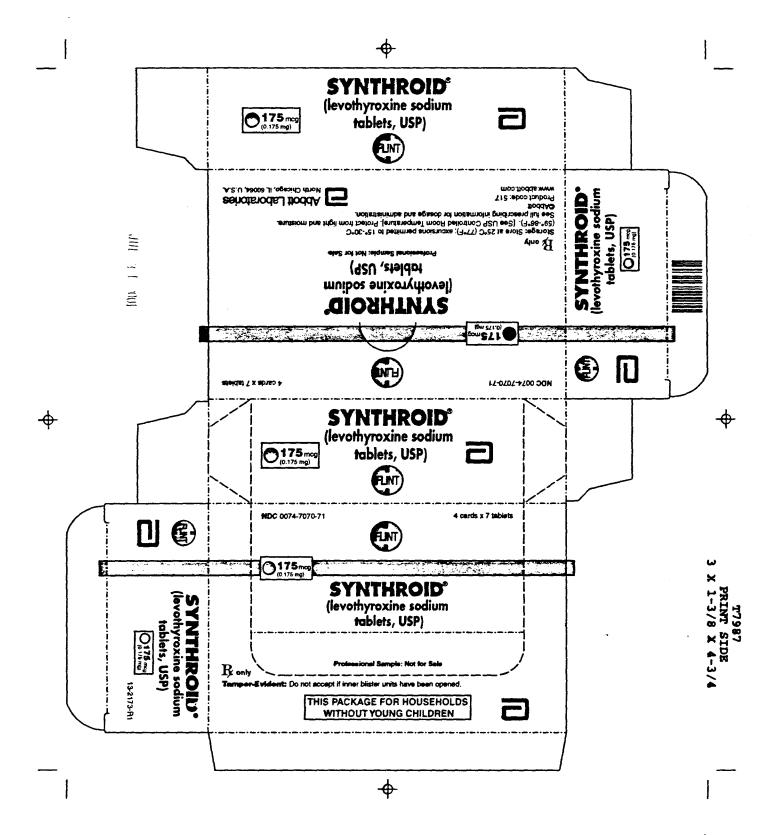
Professional Sample: Not for Sale.

Storage: Store at 25°C (77°F): excursions permitted to 15°-30°C (59°-86°F). [See USP Controlled Room Temperature] Protect from light and moisture.



Abbott Laboratories
North Chicago, L 60064, U.S.A

13-2176-R1



NDC 0074-7148-19 1000 TABLETS

SYNTHROID®

(levothyroxine sodium tablets, USP)

200 mcg (0.2 mg)

NSN 6505-01-288-4409

Do not accept if seal over bottle opening is broken or missing.

See full prescribing information for dosage and administration.

Dispense in a tight, light-resistant container as described in USP.

Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F). (See USP Controlled Room Temperature). Protect from light and moisture.

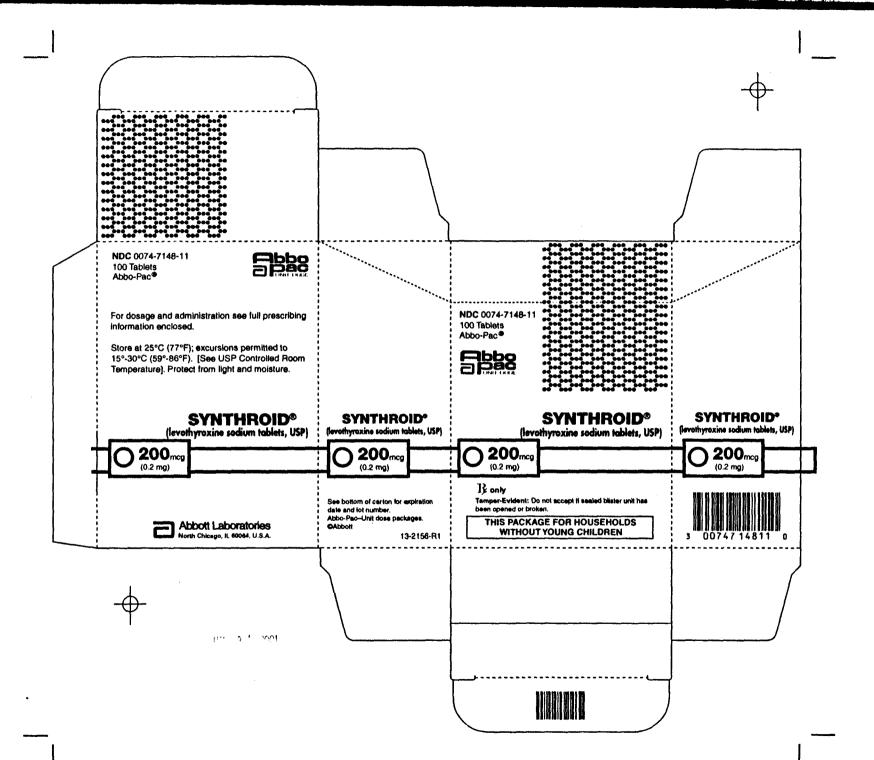
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Abbott Laboratories North Chicago, IL 60064, U.S.A.

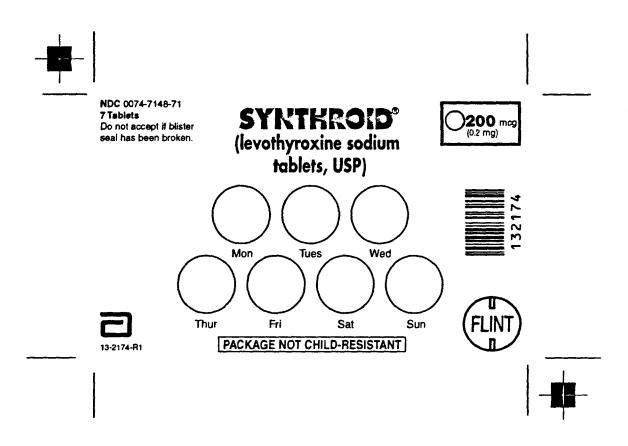
R only

02-8538-R1

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į	Lat No 7148 Protect from light and mostlum SYNTHROID® (levothyrozime sodium tablets, USP) 200 mog About Labertainie Professories 80-6737-81	XXXXXXXXX EXP XX/XX	ΧΧΧΧΧΧΧΧΧΧ ΕΧΡ ΧΧ/ΧΧ	Provided in the Franchistory of the Control of the	
	List No 7-se Protect from Byt and mosture SYNTHROID® (Seventhyroxine sodium tablets, USP) 200 mcg habon Laborstones 56-6737-R1	ΧΧΧΧΧΧΧΧΧ ΕΧΡ ΧΧ/ΧΧ	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Lin No. 1146 SYNTHROID SYNTHROID (Gevolynozine sodium tableta, use) 200 mog Abom Charles and Charles Abom Charles and Charles Synthroid	
	Let No. 7148 Protect from light and mosture. SYNTHROID® (Severthyroxine sodium tablets, USP) 200 mcg About Lebersonies 08-5737-81	XXXXXXXXX EXP XXXX	XXXXXXXXXX EXP XXXX	Let No. 71-46 Protect from Appl and maintane From One of the Conference Fro	
	Las No. 7148 Protect from light and mosture. SYNTHROID® (levothyroxine sedium tablets, USP) 200 mcg Abbon Laborstyne Abbon Laborstyne 85-5737-R1	XXXXXXXXX EXP XXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	List the Follow Poll and moseure. SYNTHROID - [IGNOTINTERING SOGIESS IGNOTING TO MOSEURE Tablets. USP) 200 mog Tablets. The Company of the	
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	Lat No. 7148 Prosect from tiph and mosture SYNTHROID'S (levothyroxine sedium tablets, USP) 200 mcg hom: Chespo, 8 6004, U.S.A. 86-577-R1	XXXXXXXX EXP XX/XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Let Ne. 7146 Potest from Pay and mestare. SYNTHROID® (Levorityroutine scedium tablete, USP) 200 mcg Abbert, USP) 200 mcg Cheer Levorente The CES STATE	
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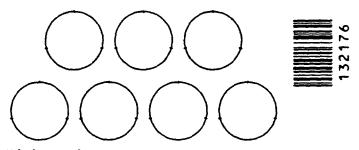
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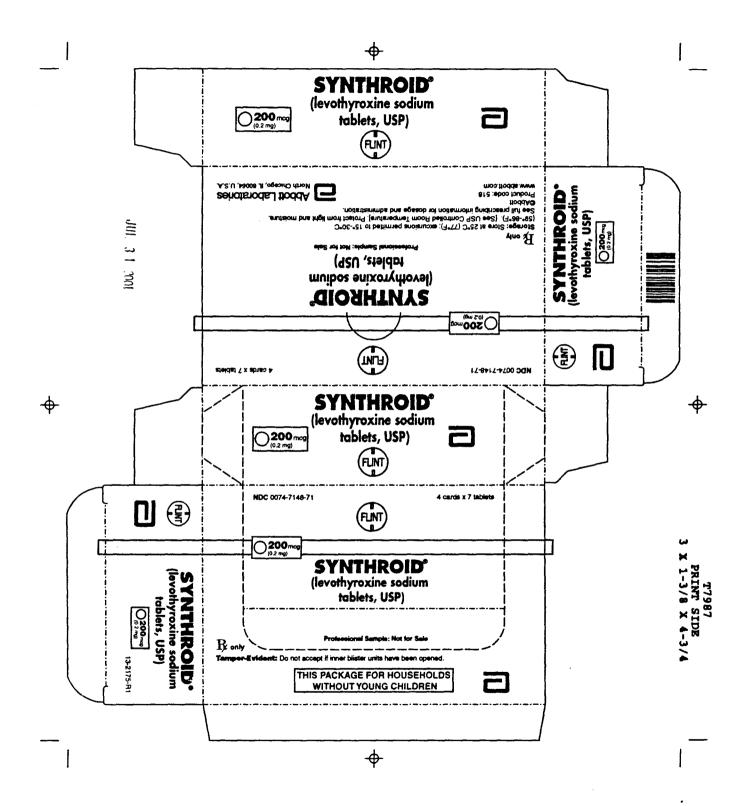
Professional Sample: Not for Sale.

Storage: Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F). [See USP Controlled Room Temperature]. Protect from light and moisture.

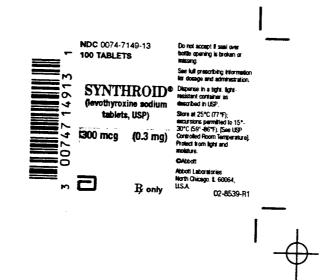


Abbott Laboratories
North Chicago, L 60064, U.S.A.

13-2176-R1



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Pg 083

NDC 0074-7149-19 1000 TABLETS Do not accept if seal over bottle opening is broken or missing. See full prescribing information for dosage and administration. SYNTHROID® Dispense in a tight. light-resistant container as described in USP. (levothyroxine sodium tablets, USP) Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F). [See 300 mcg (0.3 mg) USP Controlled Room Temperature]. Protect from light and moisture. **C**Abbott Abbott Laboratories North Chicago, IL 60064, U.S.A. \mathbf{R} only 02-8540-R1

Pg 084